

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Hugh Barrass et al.
Serial No.: 10/035,353
Filing Date: December 28, 2001
Group Art Unit: 2663
Title: Method and System for Distributing Data Communications
 Utilizing a Crossbar Switch

Mail Stop: Amendment

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

DECLARATION UNDER 37 C.F.R. § 1.131

I, Chad C. Walters, attorney for Applicants for the above-identified Patent Application, hereby make the following declaration:

1. I am an attorney for Applicants for the above-referenced Application entitled "Method and System for Distributing Data Communications Utilizing a Crossbar Switch," filed on December 28, 2001.

2. The Examiner rejects Claims 1-3, 5, 7, 10-14, 18, 20-23, 30 and 36-45 of the current Application in an Official Action mailed February 7, 2006 based, in whole or in part, on U.S. Patent No. 6,990,095, entitled "Self-Routing Data Switching System," filed on October 2, 2001 (the "Effective Date") and issued to Wu et. al. on January 24, 2006 (the "Wu Patent").

3. Prior to the Effective Date, I received documents from the inventors detailing the subject matter of the above-referenced invention. Some of the inventor disclosure is attached as Exhibits A, B and C. These documents are dated prior to the Effective Date and disclose at least all of the concepts embodied within the rejected claims (Claims 1-3, 5, 7, 10-14, 18, 20-23, 30 and 36-45) of the present invention. The dates and other selected confidential information of the client have been redacted.

4. Prior to the Effective Date and up to our filing date of December 28, 2001, I worked with the inventors to develop an application embodying the concepts disclosed to me. The attached Exhibit D details billing records of attorneys for Applicants in the months leading up to the filing of the present application on December 28, 2001, with the dates and other selected confidential information of the client redacted. These billing records demonstrate some of our continuing activities during the time period between the Effective Date and the filing of the Application at issue.

5. I declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the Application or any patent issuing thereon.

Executed this 8th day of May, 2006.


Chad C. Walters

Exhibit A

CISCO CONFIDENTIAL

This report contains the following 1 ideas:

Idea No.	Title	Inventors	Entered	Updated	Desig Rev
<u>125518</u>	Low cost crossbar for Long Reach Ethernet (VDSL) technology	Hugh Barrass (hbarrass), David Schwartz (davids)			

CISCO CONFIDENTIAL

#125518: Low cost crossbar for Long Reach Ethernet (VDSL) technology

Serial #

U.S. Pat #

File Date

Issue Date

Seq. No. 4305

View patent: Not available

Current Inventors:

Hugh Barrass (hbarrass), David Schwartz (davids)

Full Details**Inventors**

(As submitted)

Hugh Barrass (hbarrass) Work Phone: 408 527-3084 Manager: davids
Department: EAG BBSU Engineering Division: EAG
Site: SAN JOSE

David Schwartz (davids) Work Phone: 408 527-3066 Manager: larryb
Department: EAG BBSU GM Division: EAG
Site: SAN JOSE

Background

It is required to provide Long Reach Ethernet (VDSL-based) service to an arbitrary (but small) number of users in an installation consisting of many potential users.

In order to provide a cost-effective solution, a mechanism is needed which allows a small number of LRE switch ports to provide service to a large number of potential users.

Redacted

Summary

This invention consists of a partially populated crossbar (which does not provide connectivity from any port to any port) and some extra ports which "sweep" all of the uncommitted lines to search for new users.

Advantages

The partially populated crossbar allows costs and technical difficulties to be minimized.

The "sweeper" ports allow user self-provisioning without human intervention.

Redacted

Exhibit B

CISCO CONFIDENTIAL

This report contains the following 1 ideas:

Idea No.	Title	Inventors	Entered	Updated	Desig Rev
131048	Solid state crossbar for VDSL port provisioning	Hugh Barrass (hbarrass), David Schwartz (davids)			

CISCO CONFIDENTIAL

#131048: Solid state crossbar for VDSL port provisioning

Serial #

File Date

Seq. No. 4680

U.S. Pat. #

Issue Date

View patent: *Not available***Current Inventors:**

Hugh Barrass (hbarrass), David Schwartz (davids)

Full Details**Inventors**

(As submitted)

Hugh Barrass (hbarrass) **Work Phone:** 408 527-3084 **Manager:** davids
Department: EAG BBSU Engineering **Division:** EAG
Site: SAN JOSE

David Schwartz (davids) **Work Phone:** 408 527-3066 **Manager:** larryb
Department: EAG BBSU GM **Division:** EAG
Site: SAN JOSE

Background

It is required to provide Long Reach Ethernet (VDSL-based) service to an arbitrary (but small) number of users in an installation consisting of many potential users.

In order to provide a cost-effective solution, a mechanism is needed which allows a small number of LRE switch ports to provide service to a large number of potential users.

Summary

Redacted

This invention consists of a crossbar switch implemented using silicon transistor technology to provide the variable connection between the switch (or DSLAM) and the lines connecting to the users.

Current solutions include relay based crossbar switches - these have slower switching times and much shorter working lives (limiting the average switching frequency to ~1 per day instead of ~1 per millisecond).

Silicon transistor based crossbar solutions have been used in many other applications including: network packet switching; super-computer backplanes; video multiplexing; voice and low-speed data switching. This is the first known application of silicon transistor based crossbars to Very High Bit Rate DSL technology.

Advantages

The speed and frequency of switching enable many novel solutions which would be impossible with relay-based switches.

The use of VDSL enables higher data rates which could support new applications unavailable using prior technologies.

Redacted

Exhibit C

Redacted

2.2 Connection table (1-16 switches)

This configuration yields at least 3 overlapping ports which allows clusters of up to 5 adjacent live users.

Examining the table shows that clusters of 5 live users may be supported in almost all cases. Only a few gaps exist which will only allow clusters of 4 live users. This is much more likely to be acceptable.

Table 2: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
1	x																							
2	x	x																						
3	x	x																						
4	x	x	x																					
5	x	x	x																					
6	x	x	x																					
7	x	x	x	x																				
8	x	x	x	x																				
9	x	x	x	x																				
10	x	x	x	x																				
11	x	x	x	x	x																			
12	x	x	x	x	x																			
13	x	x	x	x	x																			
14	x	x	x	x	x																			
15	x	x	x	x	x	x																		
16	x	x	x	x	x	x																		
17		x	x	x	x	x																		
18			x	x	x	x																		

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Table 2: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
19			x	x	x	x	x																	
20				x	x	x	x																	
21				x	x	x	x																	
22				x	x	x	x																	
23					x	x	x	x																
24					x	x	x	x																
25					x	x	x	x																
26					x	x	x	x																
27						x	x	x	x															
28						x	x	x	x															
29						x	x	x	x															
30						x	x	x	x															
31							x	x	x	x														
32							x	x	x	x														
33							x	x	x	x														
34							x	x	x	x														
35								x	x	x	x													
36								x	x	x	x													
37								x	x	x	x													
38								x	x	x	x													
39									x	x	x	x												
40									x	x	x	x												
41									x	x	x	x												
42									x	x	x	x												
43										x	x	x	x											
44										x	x	x	x											
45										x	x	x	x											
46										x	x	x	x											
47											x	x	x	x										
48											x	x	x	x										
49												x	x	x										
50												x	x	x										
51												x	x	x	x									
52												x	x	x	x									

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Table 2: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
53												x	x	x	x									
54												x	x	x	x									
55													x	x	x	x								
56													x	x	x	x								
57													x	x	x	x								
58													x	x	x	x								
59														x	x	x	x							
60														x	x	x	x							
61														x	x	x	x							
62														x	x	x	x							
63															x	x	x	x						
64															x	x	x	x						
65															x	x	x	x						
66															x	x	x	x						
67																x	x	x	x					
68																x	x	x	x					
69																x	x	x	x					
70																x	x	x	x					
71																	x	x	x	x				
72																	x	x	x	x				
73																	x	x	x	x				
74																	x	x	x	x				
75																		x	x	x	x			
76																		x	x	x	x			
77																		x	x	x	x			
78																		x	x	x	x	x		
79																			x	x	x	x		
80																			x	x	x	x	x	
81																			x	x	x	x	x	x
82																			x	x	x	x	x	x
83																				x	x	x	x	x
84																				x	x	x	x	x
85																				x	x	x	x	x
86																				x	x	x	x	x

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Table 2: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
87																					x	x	x	x
88																					x	x	x	x
89																					x	x	x	x
90																					x	x	x	x
91																						x	x	x
92																						x	x	x
93																						x	x	x
94																							x	x
95																							x	x
96																								x

2.3 Connection table (1-16 switches with sweeper)

This configuration is very similar to the 1-16 version but ports 23 and 24 cover all 96 lines.

The table shows that this configuration has the same overall behaviour to the previous one with two notable exceptions. Firstly the "sweeper" ports can be applied anywhere to cope with one or two large clusters. The second is that one of the sweepers can be used to monitor "potentially" live lines to allow genuine self-provisioning.

Table 3: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
1	x																						s	s
2	x	x																					s	s
3	x	x																					s	s
4	x	x	x																				s	s
5	x	x	x																				s	s
6	x	x	x																				s	s
7	x	x	x	x																			s	s
8	x	x	x	x																			s	s
9	x	x	x	x																			s	s
10	x	x	x	x																			s	s
11	x	x	x	x	x																		s	s
12	x	x	x	x	x																		s	s

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Table 3: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
13	x	x	x	x	x																		s	s
14	x	x	x	x	x																		s	s
15	x	x	x	x	x	x																	s	s
16	x	x	x	x	x	x																	s	s
17		x	x	x	x	x																	s	s
18			x	x	x	x																	s	s
19			x	x	x	x	x																s	s
20				x	x	x	x																s	s
21				x	x	x	x																s	s
22				x	x	x	x																s	s
23					x	x	x	x															s	s
24					x	x	x	x															s	s
25					x	x	x	x															s	s
26					x	x	x	x															s	s
27						x	x	x															s	s
28						x	x	x	x														s	s
29						x	x	x	x														s	s
30						x	x	x	x														s	s
31							x	x	x														s	s
32							x	x	x														s	s
33							x	x	x	x													s	s
34							x	x	x	x													s	s
35								x	x	x													s	s
36								x	x	x													s	s
37								x	x	x	x												s	s
38								x	x	x	x												s	s
39									x	x	x												s	s
40									x	x	x												s	s
41									x	x	x												s	s
42									x	x	x	x											s	s
43									x	x	x	x											s	s
44										x	x	x											s	s
45										x	x	x											s	s
46										x	x	x											s	s

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Table 3: Connection Table - 1-8

Switch port											1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
47										x	x	x	x										s	s
48										x	x	x	x										s	s
49											x	x	x										s	s
50											x	x	x										s	s
51											x	x	x										s	s
52											x	x	x	x									s	s
53											x	x	x	x									s	s
54												x	x	x									s	s
55												x	x	x									s	s
56												x	x	x	x								s	s
57												x	x	x	x								s	s
58													x	x	x								s	s
59													x	x	x								s	s
60													x	x	x								s	s
61													x	x	x	x							s	s
62													x	x	x	x							s	s
63														x	x	x							s	s
64														x	x	x							s	s
65														x	x	x							s	s
66														x	x	x	x						s	s
67														x	x	x	x						s	s
68															x	x	x						s	s
69															x	x	x						s	s
70															x	x	x						s	s
71															x	x	x	x					s	s
72																x	x	x					s	s
73																x	x	x					s	s
74																x	x	x					s	s
75																x	x	x	x				s	s
76																x	x	x	x				s	s
77																	x	x	x				s	s
78																	x	x	x	x			s	s
79																	x	x	x	x			s	s
80																	x	x	x	x	x		s	s

A printed version of this document is an uncontrolled copy.

Table 3: Connection Table - 1-8

Switch port										1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Line	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
81																	x	x	x	x	x	x	s	s
82																		x	x	x	x	x	s	s
83																		x	x	x	x	x	s	s
84																		x	x	x	x	x	s	s
85																		x	x	x	x	x	s	s
86																		x	x	x	x	x	s	s
87																			x	x	x	x	s	s
88																			x	x	x	x	s	s
89																			x	x	x	x	s	s
90																			x	x	x	x	s	s
91																				x	x	x	s	s
92																				x	x	x	s	s
93																				x	x	x	s	s
94																					x	x	s	s
95																					x	x	s	s
96																						x	s	s

Exhibit D

BAKER BOTTS L.L.P.
PRO FORMA STATEMENT

Client 062891

CISCO SYSTEMS, INC.

Matter 062891.0637

(4680) Solid State Crossbar for VDSL Port
Provisioning Patent Application

Redacted

DATE	INDEX	TK NO.	DESCRIPTION	WORKED HOURS	BILLABLE HOURS	BILLABLE AMOUNT	STAT	ACT CODE
			Reviewing invention disclosure; conducting inventor interview with Mr. Barrass.	2.40				
			Reviewing technology and inventors' disclosure; preparing for interview; interviewing inventor.	4.00				
			Reviewing interview notes; formulating strategy for claims; drafting claims.	5.30				
			Formulating strategy for claims and figures; drafting claims, figures and detailed description.	7.50				
			Drafting detailed description, claims and figures.	3.40				
			Drafting claims, figures and detailed description.	8.40				
			Drafting detailed description, summary and background.	7.90				
			Reviewing and revising detailed description and background.	3.80				

BAKER BOTTS L.L.P.
PRO FORMA STATEMENT

Client 062891
Matter 062891.0637

CISCO SYSTEMS, INC.
(4680) Solid State Crossbar for VDSL Port

DATE	INDEX	TK NO.	DESCRIPTION	WORKED HOURS	BILLABLE HOURS	BILLABLE AMOUNT	STAT	ACT CODE
			Final review and editing of application.	3.80				
			Drafting additional detailed description and claims; reviewing and revising detailed description, claims and figures.	7.00				
			Revising application based upon inventor's comments; preparing application for filing.	2.40				
Total Unbilled Time Value				55.90				

Redacted

Total Unbilled Costs